

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A computer program product, tangibly embodied in an information carrier, the computer program product being operable to cause data processing apparatus to:  
cause an executing instruction stream to branch to an instruction at an address specified in the instruction if a state indicating a current microengine processing state of a specified state name is a specified value.
2. (Currently amended) The computer program product of claim 1 wherein the state is set to a logic one or a logic zero by a processor ~~and indicates the currently processing state.~~
3. (Currently amended) The computer program product of claim 1 wherein the state is set to logic one or a logic zero by a microengine in a parallel processor ~~and indicates the a currently processing state.~~
4. (Previously presented) The computer program product of claim 2 wherein the state is available to a plurality of microengines.
5. (Previously presented) The computer program product of claim 1 further comprising:  
an optional token that is set by a programmer and specifies a number i of instructions to execute following the branch before performing the branch operation where the number of instructions can be specified as one, two or three.

6. (Previously presented) The computer program product of claim 1 wherein causing the executing instruction stream to branch has the following format:

br\_inp\_state[state\_name, label#], optional\_token.

7. (Previously presented) The computer program product of claim 1 wherein causing the executing instruction stream to branch causes a branch if the value of the specified state name is set to a logic one.

8. (Previously presented) The computer program product of claim 1 wherein causing the executing instruction stream to branch causes a branch if the value of the specified state name is cleared to a logic zero.

9. (Previously presented) The computer program product of claim 1 wherein the state name is the name assigned to an executing context.

10. (Currently amended) A method of operating a processor having multiple microengines comprises:

evaluating a value of a specified state name, the state name indicating a current microengine processing state; and

performing a branching operation based on the value of the specified state name being set or cleared.

11. (Currently amended) The method of claim 10 wherein the state is set to a logic one or a logic zero by a processor ~~and indicates the currently processing state.~~

12. (Currently amended) The method of claim 11 wherein the state is set to logic one or a logic zero by a microengine in a parallel processor ~~and indicates the currently processing state.~~

13. (Original) The method of claim 11 further comprising:

branching to an instruction at a branch target field specified as a label in the instruction.

14. (Original) The method of claim 11 further comprising:

executing a number *i* of instructions following execution of the branch instruction before performing the branch operation based on evaluating an optional token that is set by a programmer.

15. (Original) The method of claim 11 further comprising:

evaluating an optional token that is set by a programmer; and  
executing one instruction following execution of the branch instruction before performing the branch operation based on whether the optional token is set.

16. (Currently amended) A processor comprises:

a register stack;  
an arithmetic logic unit coupled to the register stack and a program control store that stores a branch instruction that causes the processor to:  
evaluate a value of a specified state name, the state name indicating a current microengine processing state; and  
perform a branching operation based on the value of the specified state name being set or cleared.

17. (Currently amended) The processor of claim 16 wherein the processor is a parallel processor with the register stack an arithmetic logic unit is part of a microengine, and the processor further comprises:

at least an additional microengine, the microengine comprising:  
a register stack;

an arithmetic logic unit coupled to the register stack and a program control store, and wherein the state is set to logic one or a logic zero by one of the microengines ~~and indicates the currently processing state.~~

18. (Original) The processor of claim 16 further comprising:

a branch target field specified as a label in the instruction.

19. (Currently amended) A computer program product residing on a computer readable medium for causing a processor to perform a function comprises instructions causing the processor to:

evaluate a value of a specified state name, the specified state name indicating a current microengine processing state; and

perform a branching operation based on the value of the specified state name being set or cleared.

20. (Original) The computer program product of claim 19 wherein instructions to perform a branching operation branch if the value of the specified state name is set to a logic one.